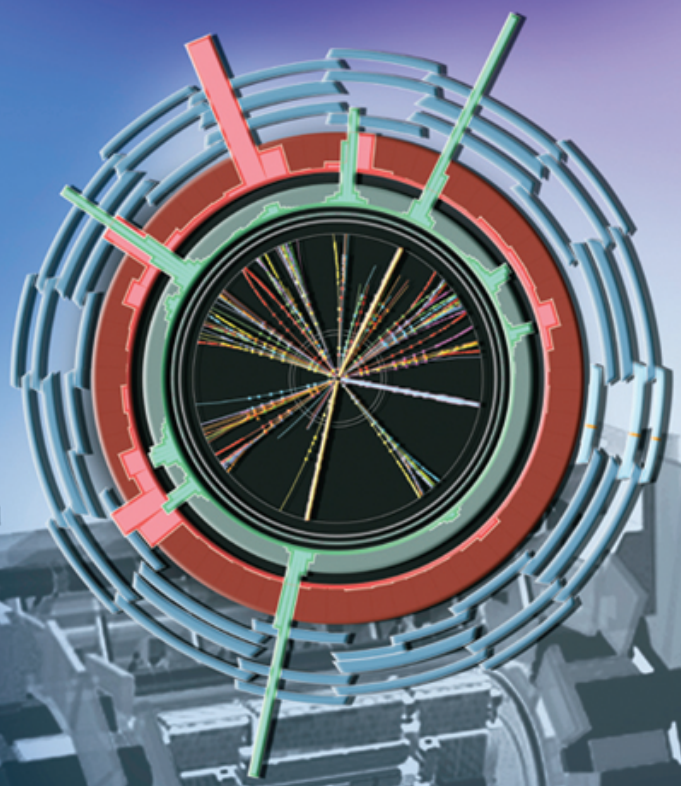
ATLAS Physics

http://atlas.ch

The unknown

ATLAS brings experimental physics into new territory. Theoretical ideas predict major discoveries, but nobody knows for sure what new phenomenon may be discovered. Most exciting is the completely unknown surprise - new processes and particles will change our understanding of energy and matter and of the basic forces that have shaped our universe since the beginning of time.



Dark matter

ATLAS will recreate the conditions of the universe just after the big bang to understand why the universe is like it is today. It will investigate why the matter of the universe is dominated by an unknown sort of matter called dark matter. Some theories predict that new particles (supersymmetric particles) could be the constituent of dark matter. If such particles exist, ATLAS should discover them and therefore should elucidate the mystery of dark matter.

Antimatter

At the very beginning of the universe, equal amounts of matter and antimatter existed. If antimatter were really an exact mirror image of matter, everything would have annihilated to leave just energy. But why was some of the matter left over to create animals, people, the earth, the solar system and the galaxies? ATLAS will look for the tiny difference that may exist between matter and antimatter.

Mass

Why do fundamental particles have such different masses? Two of the greatest mysteries are how particles gain mass and how mass and energy are related. To explain these mysteries, theories predict a new particle, the Higgs particle. If this particle exists, ATLAS will discover it and will therefore solve the problem of masses.